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ABSTRACT

This study involved the development and use of a cost model to assess the economic consequences of the introduction of a year-round school (YRS) program. The cost model has two components. First, a comprehensive accounting procedure details the costs unique to a year-round calendar and estimates the costs that would have been incurred if the school had remained on a traditional calendar. Second, an interactive computer program permits sensitivity analysis. The cost analysis model was first used to determine the financial impacts of the YRS program implemented in the Pajaro Valley Unified School District (California). The model revealed a savings of $150,000 or 4.1 percent of the district's total per pupil expenditure. When the model was used in six other California school districts, savings ranged from $9,000 to $251,000. Usually the YRS program results in costs savings of 4-5 percent. The diversity of results may be due to some schools making programmatic changes as a result of the YRS program. Thus anticipated costs savings will shrink dramatically unless the schedule change is managed judiciously. Overall, the results of the analysis indicate that careful implementation of a YRS program can result in substantial cost savings. (Author/JM)

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A YEAR-ROUND SCHOOL COST MODEL

Robert W. Burnett

Education Research Center

Paper prepared for the annual
meeting of the American Educational
Research Association, April 8-12, 1979,
San Francisco, California

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Abstract

During the past decade there has been a rapid increase in the number of year-round educational programs--schools where student attendance periods are staggered so that facilities are in use for 12 months a year. District studies of the possible implementation of a year-round program usually address questions of economic feasibility, educational impact, and social acceptance. This paper addresses the economic consequences of a year-round program. SRI International developed a cost model that compares the fiscal situation at a year-round school (YRS) with a simulation of what it would cost to operate the same school as a traditional-calendar school (TCS). The cost model compares per-pupil cost under each calendar in order to determine the "break-even enrollment." This model has been used successfully in several school districts. Usually the YRS program results in cost savings of 4-5 percent. However, where programmatic changes are introduced at the same time that the schedule is changed, the potential YRS savings often are eroded rapidly (and it becomes impossible to separate the fiscal effects).

INTRODUCTION

For the past 50 years, the standard school year in the United States has been 9 months long, generally beginning around Labor Day and continuing until early June. During these 9 months most schools are required by state law to be open approximately 180 days. During the three summer months most schools are closed, although some operate optional summer school programs. Over the past 10 years, hundreds of schools have changed from this standard pattern to year-round educational programs. Children in a year-round school (YRS) usually are not required to attend school more than 180 days, but these days of attendance occur during a 12-month period rather than during the 9-month, September-to-June traditional-calendar school year. Attendance periods are staggered for different groups of students so that two-thirds to four-fifths of the school's students attend regular classes at any given time, while the remaining students are on vacation.

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The most common reason for changing to year-round schooling is a rapid increase in a school's or a district's enrollment. By simply changing its calendar, a school may increase its capacity by as much as 50 percent. Other reasons for a change to a year-round program include the ability to provide attendance options for parents, to provide more remedial opportunities for children, to reduce time spent in relearning forgotten material, and to serve as a catalyst for changing the curriculum.

There are several types of attendance patterns in use for year-round programs. The YRS program in most common use is the "45-15" attendance plan,[1] which places students into one of four groups of approximately equal size (Group A, B, C, or D). Each group attends school for 45 consecutive weekdays (9 weeks) and then is on vacation for 15 days (3 weeks). Hence, one group (approximately one-fourth of the students) is always on vacation, thereby increasing each school's capacity by one third. For example, if a school had 25 classrooms and 30 students in each classroom, the school's capacity under a traditional 9-month program would be 750. However, under a 45-15 YRS program, the capacity can be increase to 1,000 (a 33-1/3 percent increase), because, at any point in time, only three-quarters of the students (750) are attending school. Such a 45-15 schedule is graphically represented in Figure 1. Each box represents a period of 15 weekdays. The white boxes indicate that the group is on vacation. For example, during the first 15 day period in July Groups A, C, and D

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1 The other attendance plans are discussed in Appendix A of Sol H. Pelavin, Susan W. Bryson, Robert W. Burnett, and Susan M. Peterson, A Study of Year-Round Schools, Vol. I, Final Report (Menlo Park, California: SRI International, 1979).

attend school while Group B is on vacation. During the next 15-day period, Group C is on vacation while Groups, A, B, and D attend school.

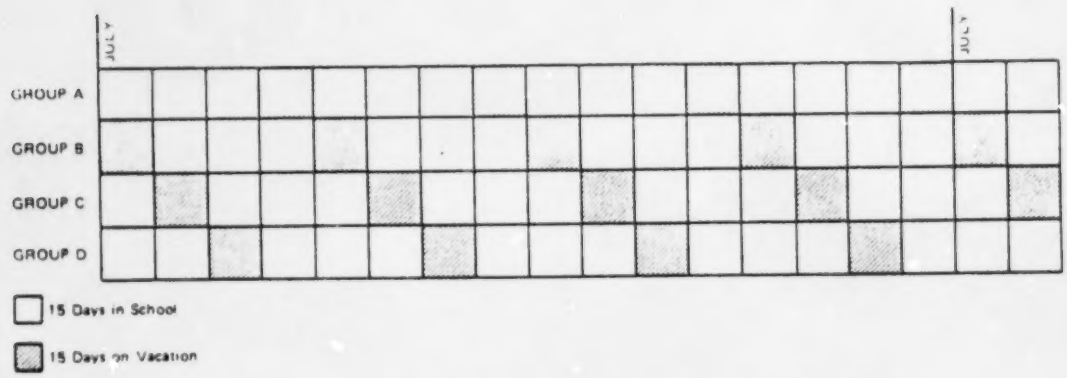

FIGURE 1 YEAR-ROUND 45-15 SCHEDULE (STAGGERED)

Most district studies of the possible implementation of a year-round program address three sets of questions:

- Economic feasibility--What will be the fiscal impact of the YRS program in terms of capital, operating, and start-up costs? The basic economic question is: What is the total cost of providing equivalent basic instructional services in a given school year under each schedule (tradtional vs. year-round) for the same student population?

- Educational impact--How will the year-round schedule affect student achievement?

- Social acceptance--What attitudes will parents, teachers, and members of the community at large have toward the year-round program?

The cost model described in this paper was developed as part of a retrospective analysis designed to answer these questions for an existing YRS program in the Pajaro Valley Unified School District (PVUSD), about 90 miles south of San Francisco, California. This SRI study was conducted for the Office of the Assistant Secretary for Planning and Evaluation (ASPE) of the Department of Health, Education and Welfare. ASPE began studying year-round schools in 1974, and the first ASPE-sponsored report on YRS programs was issued in May 1975[2]. This first report described the many models for YRS programs and discussed their major objectives and effects. Later that year a second report[3] documented the history of the YRS movement in the United States and proposed a research design for a larger, more comprehensive study of YRS programs. In 1976, ASPE issued a Request for Proposals (RFP-71-76-OS) reflecting the influence of a research design proposed in the Shepard report. The RFP called for a study of the YRS program in the Pajaro Valley Unified School District which in 1972, to alleviate overcrowded classrooms and eliminate double sessions, had implemented a 45-15 year round calendar in five schools. The contract for the study was awarded to SRI International (then Stanford Research Institute) on June 30, 1976.

There were three primary results of the SRI study of the Pajaro Valley Unified School District:

- An annual reduction of 4-5% in the cost of education under the YRS program.

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2 P.D. Rice et al., Year-Round Schools: Models and Issues, (Washington, D.C.: Department of Health, Education, and Welfare, ASPE, 1975).

3 M. Shepard et al., "The Importance of the Year-Round Schools Movement," Report No. AAI-75-139, Abt Associates, Inc., 1975.

- No deleterious effect on student test scores and some suggestion of educational superiority for the YRS program.

- Widespread acceptance and approval of YRS among the parents and teachers of YRS students.

In the remainder of this paper we discuss the economic consequences of the year-round program at PVUSD, as well as the results of applying the SRI cost model to six other school districts in California and two districts in other states.

THE SRI COST ANALYSIS MODEL

From the local perspective, overcrowding and cost factors have historically been the primary impetus for proposing or implementing a year-round program. To a school system like PVUSD, faced with expanding enrollments and an electorate that has repeatedly demonstrated its unwillingness to finance construction of new facilities, conversion to a year-round calendar may represent an attractive alternative to double sessions or larger classes, the most common responses to overcrowding.

Projections of construction costs "avoided" by year-round schooling are frequently used as a strong selling point to district planners, school boards, and the community in general. At the same time, such projections usually predict an increase in operating costs as a consequence of keeping schools open all year (principals and others extend their contracts, transportation and utility costs increase, and so on).

One component of our study was a detailed examination of the economic impact of the YRS program implemented in PVUSD. In first reviewing the experiences of other school districts, we found that there are several ways to analyze the impact of a schedule change. Among the most commonly found are the following:

(1) The current situation at a year-round school can be compared with the prior situation at the same school (i.e., when it operated under a traditional calendar).

(2) The current situation at a year-round school can be compared with the current situation at another school operating under a traditional calendar.

(3) The current situation at a year-round school can be compared with a simulation of the way it would be under a traditional calendar.

Most YRS studies are of the first type. There are three problems typical of YRS cost studies of this type:

(1) The comparison examines only the incremental expenditures associated with the new schedule (e.g., the cost of extending the contract of the school principal).[4]

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4 There would also be incremental expenditures if the school program were modified to include additional students on an expanded TCS schedule.

(2) The comparison is based on different enrollment levels (e.g., the number of students served increases from 5,200 under a TCS schedule to 6,500 under a YRS schedule).[5]

(3) The comparison is confounded by other policy changes introduced concurrently with the YRS schedule (e.g., teachers receive a new contract).

There are also three problems with the second type of comparison, in which the current situation at a YRS is related to that of another TCS:

(1) The comparison may be confounded by policy differences between the two schools (e.g., one school may have a different staffing ratio than the other school).

(2) The comparison may be based on different enrollment levels and related resources (e.g., one school may have an enrollment of 300 and one secretary, while the other may have an enrollment of 400 and two secretaries).

(3) The schools may have different costs for the same resources (e.g., one school's principal may earn $20,000 per year while the other earns $25,000 per year).

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5 There are some costs that do not respond smoothly to an enrollment increase. For example, although teacher costs increase linearly as enrollment goes up, administrative costs often change as a step function; that is, they remain constant until enrollment reaches a certain point and then abruptly increase (e.g., from an enrollment of 1 to 600 students, a school has one principal; from 601 to 900 students, a school has one principal and a half-time vice-principal). Thus reliance on unit cost figures (i.e. per-pupil expenditures) is misleading, because the population base has changed.

Given the problems with the first two types of analyses, we believe that the simplest procedure is to compare the situation at a YRS with a simulation of what the same school would cost to operate under a traditional calendar (the third type of analysis mentioned above). The strategy of comparing the current situation at a school (under a year-round or a traditional calendar) with a simulation of the situation under the other calendar ensures that the educational production process at the school is held constant. This must be done to obtain a reasonable evaluation of the cost impact of a schedule change. Such a comparison also facilitates the discussion of the situation at a school in terms that the decisionmakers can relate to easily (e.g., the population is held constant so that, whether total cost or per-pupil cost is used, the figures are comparable).

The principle that underlies our simulation is that the YRS program represents only an increase in the usage of school buildings from 9 to 12 months. Most innovations in education are designed to produce some change in the nature or level of services provided to children. The YRS program, on the other hand, is generally regarded as a way of making more complete or efficient use of existing resources and as a less expensive way of providing essentially the same services offered under the TCS program. The basic differences between the two alternatives lies not with the type or amount of services provided to children, but rather with the pattern for providing services.

Therefore, analyses of the fiscal impacts of the YRS program should look for differences in the costs of allocating the same resources and

services to the same student population over the same period under the alternative schedule. In the case of a district, like PVUSD, that has an ongoing YRS program, costs under the year-round schedule are the actual costs incurred by the district. Costs under the traditional 9-month alternative must be estimated.[6]

As an example of how the simulation works, assume a school has 15 classrooms, with 30 students in each classroom. Under the YRS program this school could accomodate up to 600 students over the period of a year. The 600 students would be placed into four groups, each with 150 students. At any given time, three groups (450 students) would be attending school and one group would be on vacation. Under the TCS program the same school could accommodate only 450 students, all of whom would be in attendance from September through June. The school would then close for about 3 months, opening again the following September.

Obviously, the existing facilities would not be adequate to house the YRS student population under a 9-month calendar. If the 15-classroom school serving 600 students under the YRS program reverted to 9-month use, it would be necessary to reduce enrollment by 150, or to increase the number of pupils per classroom to 40, or to build five new classrooms. The first option--reducing the school's enrollment--is acceptable only if the 150 students can reasonably be housed in other schools in the district. The second option--increasing the number of students per class from 30

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6 Essentially, the process can be reversed for a feasibility study. In a feasibility study, the cost of an existing 9-month TCS program would be used as the basis for a simulation that compares the costs YRS and TCS programs.

to 40--would reduce the level of services and resources and therefcre would not satisfy our requirement of comparability between the YRS and TCS educational programs. To assure that our simulation is educationally comparable, we would estimate the cost of constructing and operating five additional classrooms. These are costs that would have to be incurred to provide a comparable instructional program to the same student population without the YRS program.

Whether a YRS program is less costly than a TCS program depends on the student enrollment to be served. Figure 2 shows the typical unit cost curves under both schedules.

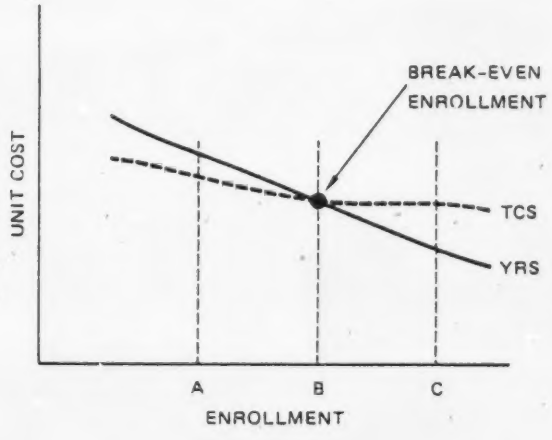

FIGURE 2 TYPICAL UNIT COSTS UNDER YRS AND TCS PROGRAMS

The vertical axis me sure unit cost (total cost per pupil served). The horizontal axis measures enrollment (increasing to the right). At enrollment A, the TCS program is less costly than the YRS program. At enrollment B, the unit costs are equal for both programs. At enrollment C, the YRS program is less costly than the TCS program.

Usually, the break-even enrollment is more than the "capacity" TCS enrollment (the maximum that could be served in existing school facilities under a traditional calendar without use of double sessions). However, the break-even enrollment is often considerably less than the theoretical capacity YRS enrollment (i.e., 1-1/3 times the capacity TCS enrollment[7]).

Three major types of costs are included in the SRI cost model:

- Capital costs "avoided" by YRS--the estimated cost for acquiring the additional schools or classrooms needed under an expanded TCS program.
- Operating costs--the recurring expense of staff salaries, benefits, materials, equipment, maintenance, transportation, and so forth.
- Transition costs--the expense of converting to a YRS program in one or more schools.

The basic process for performing this cost analysis can be summarized as follows:

(1) Determine the number of additional schools or classrooms needed under an expanded traditional-calendar program.

(2) Estimate the costs of providing these additional schools or classrooms.

(3) Estimate the operating costs directly attributable to the year-round program.

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7 Assuming the 45-15 year-round schedule.

(4) Estimate the expense of operating the additional schools and classrooms required under an expanded TCS program.

(5) Estimate the costs for the transition to the year-round calendar.

(6) Compare the estimated annual costs "avoided" under YRS with the annual costs incurred because of YRS. If costs avoided exceed costs incurred, YRS represents a saving to the district.

The model itself has taken two forms. There is a detailed handbook for conducting pre- and post-implementation cost analyses; following these procedures usually takes one person 2 to 3 weeks. There is also an abbreviated procedure, which takes 2 to 4 days to complete. This provides input to a computer program that computes the break-even enrollment, the incremental savings or expense at the current enrollment, and the relative sensitivity of the results to various policy and planning factors.

RESULTS OF THE PVUSD COST ANALYSIS

CAPITAL COSTS

To estimate classroom needs, we compared current use of classroom space at the five year-round schools in PVUSD with projected use under the traditional schedule. We found PVUSD's YRS program enrolled 2,668 students, which was 464 beyond the five schools' TCS program capacity. Since the PVUSD student-teacher ratio was 29:1, 16 classrooms (11 elementary and 5 junior high) would have been needed to house the schools'

current enrollment without resorting to double sessions or changing the pupil-teacher ratio.

To provide these additional facilities, we assumed that the district would construct a new elementary school and add five classrooms to the existing junior high school. Using state-supplied figures for square feet required per child and construction cost per square foot, we estimated construction cost for the new elementary school (in 1975 dollars) as $970,589 and the cost for the junior high school classrooms as $554,124. The total saving in construction costs realized by PVUSD's year-round use of five schools was thus $1,524,713. Assuming this amount would be financed by a 20-year bond at 6 percent interest, with a bond broker's fee of 4 percent, we calculated the total capital cost as $2,764,597, for an annual savings of $138,248 over the 20-year period.

OPERATING COSTS

In 1972 the PVUSD Year-Round Study Commission estimated that conversion to a year-round schedule would result in an increase of $47,730 in annual operating expenses. The bulk of the increase covered contract extensions for administrative, instructional, and classified personnel.

Our analysis of PVUSD operating costs indicated that the year-round program resulted in a savings of $13,393 in 1975-76. The explanation for the difference between PVUSD's projected increase and our finding of a net saving is simple. The procedure that we followed compares operating costs that are directly attributable to the YRS program with an estimate of the costs that would be incurred for operating the additional elementary

school and junior high classrooms required to provide a comparable TCS program. We allowed for the possibility that some operating costs are higher under the YRS program and others are higher under the TCS simulation. The PVUSD Study Commission, on the other hand, looked only at the incremental costs that would result from a shift to the YRS program; it did not take into account the salaries, benefits, utilities, and other operating expenses that would result from building more classrooms. Under these circumstances, the Commission had to find an increase.

The differences between operating costs under the two programs are shown in Table 1. The table indicates that the year-round schedule is more expensive in salaries for classified personnel and in supplies and equipment, and less expensive in salaries for certificated personnel, employee benefits, and contracted services.

TABLE 1

IMPACT OF THE YRS PROGRAM ON PVUSD OPERATING COSTS

Accounting Category	Net Saving (Cost) Under YRS
Certificated Salaries	$15,608
Classified Salaries	(10,774)
Employee Benefits	10,836
Books, Supplies, and Equipment Replacement	(12,042)
Contracted Services	9,765
Total	$13,393

TRANSITION COSTS

Transition costs are the unique costs incurred in implementing a change. These costs are distinguished from operating costs by their nonrecurring nature. Included were costs for planning (e.g., the Study Commission's investigation of year-round alternatives, the campaign conducted to inform parents and the community about the YRS program and assess their response prior to the Board's decision); in-service training for teachers; the district's evaluation efforts (which included student testing and surveys of parents' and teachers' opinions of the year-round schedule); and purchase of equipment and materials. Not included in the calculation of transition costs were contributed inputs, such as the time district administrators spent planning and implementing the schedule change.

To estimate the annual cost of the transition to the district, we amortized this amount over a 20-year period at 6 percent interest (the same bond life and interest rate used to calculate the capital costs avoided by the adoption of the YRS program). This procedure yielded an annualized transition cost of $826, which could be combined with the annual capital and operating costs to determine the overall impact of the year-round program on PVUSD's yearly budget.

THE OVERALL IMPACT ON PVUSD's ANNUAL BUDGET

The impact of PVUSD's year-round school program on the district's 1975-76 budget can be summarized as follows:

- Capital costs--annual saving of $138,248.
- Operating costs--annual saving of $13,393.
- Transition costs--annual expense of $826.
- Net result--annual saving of $150,815.

The overall annual savings amounted to $56.53 per pupil served by the YRS program, which was 4.1 percent of the district's total annual per-pupil cost.

KEY FACTORS IN THE ECONOMIC IMPACTS OF THE PVUSD YRS PROGRAM

In the previous section we suggested several factors that made significant contributions to the annual savings of over $150,000 realized at PVUSD. The major share of the saving (better than 90 percent) came about because more efficient use of existing facilities permitted the district to avoid building a new elementary school and five new junior high classrooms. A second important factor was the use of nonstandard contracts; savings in teacher costs were realized at three of the four schools where there were nonstandard contracts.[8] A third factor was

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8 Since enrollment was held constant for both programs and all students attended school the same number of days, the same total number of teaching days was required under both programs. In the TCS program, these days were provided by teachers working under standard 176-day contracts. Under the YRS program, the district permitted teachers to extend their contracts and hired some teachers under special, short contracts. Basically, our model compared the actual salary and benefit costs for teaching days covered by nonstandard contracts with the estimated cost of hiring additional teachers to provide the same number of days through standard contracts. The district's policy of allowing nonstandard contracts resulted in a saving of $24,455, mainly because teachers hired under short contracts earned substantially below-average salaries.

utility costs. Providing heat, light, and other utilities to keep the five schools open year-round cost PVUSD less than supplying utilities to keep these schools plus the additional facilities required for the simulated TCS program open for 9 months and closed during the summer.

The effects of these and other factors on total cost were examined systematically through a sensitivity analysis.[9] In this analysis we made a series of small changes in the values of cost-related factors and observed the effects these changes would have on our conclusion that the YRS program was saving money in PVUSD. The sensitivity analysis had several uses. First, it permitted us to see which variables were the most important determinants of our conclusions about cost impacts in PVUSD. Second, it permitted school decisionmakers to see what effects changes in certain policies would have on cost differences between YRS and TCS programs. Third, the sensitivity analysis allowed us to identify the enrollment level at which it became economically advantageous to convert from a YRS to a TCS program or vice versa. Finally, it showed how sensitive our conclusions were to errors in the data. If very large changes in the input variables had to occur before our conclusion that YRS saved money changed, we could be confident that our conclusion was correct.

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9 This is described in Robert W. Burnett, A Study of Year Round Schools, vol. II, Cost Analysis, and vol. III, A Handbook for Conducting Cost Analysis (Menlo Park, California: SRI International, 1979).

The sensitivity analysis was performed at the district and school levels, using input variables[10] selected both because they were considered most likely to contribute significantly to the cost impacts of the YRS program and because their values are subject to variation across schools and/or districts. Given current enrollment levels, staffing ratio was the single most powerful variable at all five year-round schools in PVUSD. At two schools the TCS program would have become less expensive than the YRS program if the staffing ratio were increased by 10 percent (from 29 to 32 students per class). The other schools required increases of 25 percent or more (i.e., 36 or more students per class). Although a 10 percent increase in staffing ratio might not affect the educational program significantly, we assumed that the increases required to make the TCS program less expensive at the other three schools would produce substantial impacts on the quality of services provided to students. Still, if staffing ratios were increased by 10 percent at all schools, the saving realized by the YRS program would have declined substantially.

Other factors over which district policymakers can exert some control had a less potent impact on YRS program savings in PVUSD. As noted earlier, teacher costs were lower at three schools that allowed nonstandard contracts. At two of these schools, savings in teacher costs

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10 These variables are: school population under YRS, staffing ratio, teacher compensation, nonteacher compensation, number of classrooms used for purposes other than basic instruction, transition cost, utilities cost, cost of utilities for an additional classroom, transportation cost, two factors associated with construction (square feet per classroom, cost per square foot), and two factors associated with financing construction (interest rate and bond life).

accounted for a substantial portion of the total saving realized by the YRS program. The total saving would have been reduced substantially at these schools if nonstandard contracts had not been permitted.

The number of classrooms used for purposes other than basic instruction by the YRS program was the third potent policy variable. At one school four classrooms were used for special programs (intersession and compensatory education pull-out programs). If four additional classrooms were reserved for uses other than basic instruction, the TCS program would have become less expensive than the YRS program. Substantial changes in classroom use could also have canceled the savings realized at two other schools.

In general, a single policy change of the magnitude needed to make the TCS program less expensive than the YRS program would be unlikely to occur. Increasing the staffing ratio by 25 percent or more would probably be unacceptable to teachers and parents and could render the schools ineligible for ADA reimbursement from the state. And it is unlikely that the number of classrooms set aside for intersession and other special uses would more than double. However, even relatively small changes in staffing ratio or loss of one classroom would have reduced the savings effected for PVUSD by the YRS program, and discontinuation of nonstandard contracts would have lowered savings significantly.

The extent to which facilities are operated at their full capacity also has a substantial impact on savings. None of the five schools was operating at full YRS program capacity. If enrollments at the five schools

had increased to capacity level, PVUSD would have "gained" another ten classrooms, increasing the annual savings in avoided capital costs by about 60 percent, or by $86,405.

RESULTS OF THE COST ANALYSES OF SIX CALIFORNIA DISTRICTS

The California Legislature's Office of the Auditor General collected fiscal data from 11 California school districts. (SRI staff participated in the data collection in the majority of these LEAs.) After publication of the Auditor General's report[11] in September 1977, we decided to reanalyze the cost data for 6 districts.

- Berryessa Unified School District, Santa Clara County
- Cabrillo Unified School District, San Mateo County
- Chino Unified School District, San Bernardino County
- Encinitas Unified School District, San Diego County
- Escondido Unified School District, San Diego County
- San Diego Unified School District, San Diego County

Two main factors contributed to this decision:

(1) The SRI model requires that the program of instruction be held constant when YRS and TCS costs are compared. In some

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11 California Office of the Auditor General, Fiscal Impact of California's Year Round School Programs. Report to the Joint Legislative Audit Committee, September 1977.

cases, the Auditor General's analysis assumed program changes; e.g., the staffing ratio was changed or the schedule for nursing or counseling services was revised. Our reanalysis held the program constant.

(2) Construction cost avoided because of the implementation of the YRS program were not computed consistantly across LEAs.[12] There are instances where the simulation of reversion to a traditional schedule was assumed not to include construction costs because of the availability of portable classrooms or surplus capacity in other schools.[13] Our reanalysis treated simulated school construction consistently.

Table 2 displays the results of the cost analyses of year-round school programs in the six California LEAs. In 1975-76 these districts saved an average of $70,000 annually by operating on the year-round schedule. Individual district savings ranged from $9,000 to $251,000. The one district that was not saving money--Encinitas, where the annual added cost was $49,000--used YRS programs in four schools for reasons other than cost savings. Although the 45-15 YRS program permits an enrollment increase of up to one-third using exising school facilities, one Encinitas school had not changed its enrollment at all and two others had made only minimal increases. Thus Encinitas was not taking advantage of the capital cost savings inherent in a YRS program.

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12 It should be noted that only two of the six LEAs implemented YRS programs primarily for cost-related reasons.

13 Terms like "available" and "surplus" obviously are relative; e.g., is a portable classroom available if it is being used for curriculum planning?

TABLE 2

SUMMARY OF LEA SAVINGS DUE TO YRS PROGRAMS

LEA	Annual Cost of Program YRS	Annual Cost of Program TCS	Saving (Cost)
Berryessa	$ 12,055,071	$ 12,121,307	$ 66,236
Cabrillo	5,063,388	5,072,454	9,066
Chino	14,763,711	14,802,314	38,603
Encinitas	3,490,556	3,441,384	(49,172)
Escondido	11,969,030	12,220,467	251,437
San Diego	176,202,881	176,305,227	102,346
Total			418,516
Average			69,753

RESULTS OF THE COST ANALYSES OF TWO NON-CALIFORNIA DISTRICTS

VALLEY VIEW SCHOOL DISTRICT, ROMEOVILLE, ILLINOIS

In June 1970, the Valley View School District put its five elementary schools and one junior high school on a year-round schedule. They were the first schools in the country to adopt the 45-15 program; therefore, their cost experience was of particular significance.

Valley View converted to the year-round schedule because of explosive enrollment growth (Romeoville is a Chicago suburb). The district expected to save the expense of 60 classrooms at a total cost of between $5 million and $6 million.[14]

14 K.L. Hermansen and J.R. Gove, The Year Round School (Hamden, Connecticut: Linnet Books, 1971), p. 120.

In the Valley View evaluation, the basic operating cost findings were:

> ...on a per pupil cost basis, the year-round school has apparently slowed the rising per pupil cost that generally accompanies school operation from year to year. That is, although there has been no real dollar savings per pupil, the "45-15" year-round school plan has resulted in a smaller increase in cost per pupil as compared to the increase between the two previous years.[15]

The Valley View cost analysis took a longitudinal form: TCS costs from 1969 were compared to 1970 YRS costs. (All costs were expressed in constant dollars.) This approach tends to mask significant effects that are not schedule related:

(1) Certificated Personnel Costs--Salaries of regular elementary school teachers increased by 10.48 percent from 1969-70 to 1970-71. The evaluation suggests two reasons:

- Teacher salary negotiations were completed in June 1970, resulting in a new salary schedule.
- Conversion to a year-round schedule allowed some teachers to "extend" their contracts: 38.7 percent of the teachers worked a contract longer than the regular 184-day contract.

(2) Transportation Costs--Enrollment in Valley View increased from 4,965 in 1968 to 5,896 is 1970. However, transportation cost went from $24.23 per pupil in 1968 to $12.06 in 1969 to $14.66

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15 Valley View School District, "The Cost of Educational Operation: The Traditional School Year vs. the Year-Round School," September, 1972, p. 21.

in 1970. The analysis was confounded by the change from a private bus contractor to school-owned and operated buses. Nonetheless, it is clear that the year-round schedule permitted Valley View to increase the number of students transported without an increase in the number of buses.

The basic problem with the study is that it does not compare the delivery of equivalent programs to equal populations under different schedules.

We visited Valley View to collect enough cost data so that we could use our model to retrospectively analyze the situation in 1970. We recreated the expenditures for the district as a whole and in one large elementary school. Because of time constraints, the short-form analysis procedure was followed. The key findings were:

Expenditure Type	Approximate Annual Saving (Cost)
Certificated Personnel	$12,000
Administrative	(30,000)
Transportation	0
Utilities	(18,000)
Classroom Construction	53,000
Transition	(15,000)

Thus, we concluded that Valley View was close to its break-even enrollment when the year-round program was initiated (the annual saving due to YRS was only $2,000). We conducted a sensitivity analysis and found that slight changes in three policy/planning variables would quickly erode the modest savings; staffing ratio, classrooms not used for basic instruction, and classroom construction cost.

In summary, we believe that our model produces results that agree with those of the Valley View study: there was no real dollar saving per pupil. Our findings, however, derive from an methodologically sounder approach, one that holds the student population and educational program constant.

PRINCE WILLIAM COUNTY SCHOOL DISTRICT, MANASSAS, VIRGINIA

In July 1971, the 45-15 schedule was implemented in four Prince William County schools because the district had reached the limit of its bonded indebtedness and faced enrollment increases. In 1972, Blair Curry and John Sweeney of Education Turnkey Systems conducted a cost analysis of one of the four 45-15 schools, Mills E. Godwin Middle School.[16] They reported a 4.2 percent saving in school facilities and a net saving of $109.46 in overall resource cost per pupil.

This study compared the situation at an actual school on a year-round schedule with a simulation of the circumstances at the same school under a traditional schedule. We found several methodological problems in the study.

(1) It appears that the YRS enrollment at Godwin did not occupy all the classrooms. To deal with this consideration, Curry and Sweeney defined the classrooms not used for basic instruction as "slack" and assumed that Prince William County had divested

16 B.H. Curry and J.M. Sweeney, "45-15 and the Cost of Education," prepared for Prince William County Schools, Education Turnkey Systems, Inc., Washington, D.C., 1972.

itself of such slack. Thus, the cost analysis did not compare equivalent programs. (It is unrealistic to expect that the "slack" classrooms are merely standing empty and are not being put to productive use by Godwin school administrators.)

(2) Curry and Sweeney reported that "Some of the cost differentials, however, will be the result of program changes caused by 45-15...." Unfortunately, these changes are not elucidated.

(3) The YRS enrollment was assumed to be one-third greater than that under a traditional program. Thus, cost comparisons between the schedules were based on two different enrollment levels; as noted above, this confounds the analysis of certain cost components such as transportation.

(4) The critical variables were presented exclusively in terms of The Education Turnkey model. Therefore, it is not possible to determine the Godwin enrollment before and after the implementation of YRS, actual budgeting costs, building utilization, and so forth. For this reason, it is difficult to examine study findings from alternative perspectives.

We visited Prince William County to collect enough cost data so that we could use our cost model to retrospectively analyze the situation at Godwin School in 1971. We recreated the expenditures using our short-form analysis procedure. The key findings were:

Expenditure Type	Approximate Annual Saving (Cost)
Certificated Personnel	$53,000
Administrative	(16,000)
Transportation	0[a]
Utilities	(1,000)
Classroom Construction	20,000
Transition	(2,000)

a The necessary transportation data were not available.

Thus, we concluded that the use of the YRS program at Godwin Middle School saved approximately $53,000 when the program was initiated. This represents a saving of some $43 per pupil, significantly lower than the $109.46 reported by Curry and Sweeney. We believe that this difference results from two methodological differences. First, the previous analysis assumed, in effect, that the theoretical YRS population was being served. We did not assume this; therefore, our estimates of savings due to avoided classroom construction are much lower than those of Curry and Sweeney. Second, we included transition cost in our calculation while the previous analysis did not.

Our sensitivity analysis indicated that the most important policy and planning variables were teacher compensation, staffing ratio, construction costs, and classrooms not used for basic instruction. Most of the total saving was due to teacher compensation savings--teachers who work an extended contract (most of the teachers) did not receive

the nonteaching days that teachers on the regular contract did. Therefore, the teachers taught 33 percent more days, but were paid only 28 percent more.[17]

In summary, we believe that our model produces results that generally agree with those of the Curry and Sweeney analysis: the year-round program does represent a saving. However, we believe that our model is more complete and offers a more comprehensive view because it holds program and population constant.

SUMMARY

This paper has discussed the economic consequences of year-round educational programs. We developed a cost model for the evaluation of these programs which compares the actual costs incurred by a YRS program with a simulation of costs for providing the same educational services to the same student population during the same time period by a TCS program.

We first used this cost analysis model to determine the financial impacts of the YRS program implemented in PVUSD. There we found an annual saving of over $150,000, or 4.1 percent of the district's total per-pupil expenditure. We then used the model in six other California

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17 TCS teachers are paid for 194 days--180 teaching days and 14 nonteaching days. YRS teachers are paid for 240 days, all of which are teaching days.

school districts, where we found an average annual saving of $70,000 due to YRS; for one district the program cost $49,000; the savings for the other five ranged from $9,000 to $251,000. Finally, we reanalyzed the cost data used in two previous evaluations of the fiscal consequences of year-round programs; in both cases, we found that YRS produced an annual saving, but not as much as originally thought.

Such a diversity of results serves to underscore a conclusion reached at PVUSD: the introduction of a year-round schedule serves as a catalyst for many changes not related to the YRS program. Thus, the expected cost savings often do not materialize because of the incremental expense associated with these other changes. There are two lessons to be learned from this experience:

- Policymakers should be forewarned that anticipated cost savings will shrink dramatically unless the schedule change is managed judiciously.

- Any comparison between the existing and alternative schedules must hold the educational program constant.

Overall, the results of the analysis lead us to conclude that a careful implementation of a YRS program can result in substantial cost savings.